

Craighead Environmental Research Institute

Monthly Progress Report: October, 2007

for the Montana Department of Transportation and Western
Transportation Institute

Bozeman Pass Wildlife Monitoring

MSU banner number 425539

1 October 2007 –31 October 2007

This is a monthly progress report for October 2007 on the Bozeman Pass Post-Fencing Wildlife Monitoring subcontract: MSU banner number 425539. This is a continuation of Task C of the Bozeman Pass Wildlife Channelization ITS Project which was extended with a subcontract addendum, extension and (the first of two) post-fencing monitoring work scope(s) for CERI to continue their wildlife monitoring field data collection efforts. This addendum covers a limited work scope for one (of two related) contract(s) between WTI and MDT (MSU banner number 425539). It was anticipated that the funds in this account/contract would support CERI in their work through approximately May 2007. A subsequent subcontract associated with the second, related contract (MSU banner number 426899) between MDT and WTI was established for CERI to complete monitoring and evaluation efforts. Ultimately, data produced from both contracts/subcontracts will be merged and analyzed to address the research questions related to wildlife-vehicle collisions and wildlife movements under I-90.

This report was prepared by staff at the Craighead Environmental Research Institute (CERI) for the Montana Department of Transportation and Western Transportation Institute as part of the Bozeman Pass Wildlife Channelization ITS Project.

The objective of Task C (MSU Office of Sponsored Programs subcontract GC200-03-Z3137) is to collect, manage, and analyze field data on wildlife traffic victims and wildlife movements on and near I-90 on Bozeman Pass in order to evaluate the effectiveness of wildlife mitigation techniques applied in this area. The Craighead Environmental Research Institute (CERI) oversees the wildlife monitoring aspects of this project. This task includes oversight of:

- Road-kill data collection and data management;
- MRL overpass monitoring including
 - Behavioral observation sessions of animal-road crossing events
 - Collecting tracking event data from track bed/plate(s)
- Maintaining remote motion/heat-triggered still film cameras at existing culverts
- Supervise field technicians with data collection protocols and quality control;
- Data analysis of road-kill and behavioral crossing data;
- Develop GIS maps and analyses;
- Prepare monthly, quarterly and annual reports and publications.

Task 1: Road Kill Surveys during October 2007

Road kill surveys were conducted between Bozeman and Jackson Creek. Surveys were conducted on both sides of I-90 from Bozeman to Jackson Creek and back for a total of 22 miles round trip and an estimated 1 hour of labor per survey. CERI personnel recorded road-kill on approximately a three-times-weekly basis. Documenting animal-vehicle collisions will continue through June 2010 during the post-construction phase. Because of some close calls with traffic while stopped on the shoulder during road kill surveys and camera installation, we purchased two emergency flashing lights for our vehicles.

Fifteen (1) road-kill surveys were driven during October of 2007. Only one (1) of those recorded no new road-kill. At 22 miles per survey this equals 330 miles driven in October for this subcontract. Although MDT funding for this survey effort was reduced to 22 miles for the monitoring subcontract, CERI has continued to survey the entire 50 mile highway segment and is supplementing the survey budget with funding from other sources. Totals of animals killed between Bozeman and Livingston were:

Bozeman Pass Roadkill Totals	October
Species	Number
Badger	0
Beaver	0
Bird Spp.	2
Black Bear	1
Cowbird	0
Coyote	1
Deer species	7
Dog	0
Domestic cat	0
Elk	1
Gopher Snake	0
Gray Partridge (Hun)	3
Great Blue Heron	0
Great Horned Owl	3
Ground Squirrel	0
Grouse	0
Magpie	3
Mallard	1
Marmot	0
Meadowlark	0
Mink	0
Moose	1
Mule Deer	2

Pheasant	0
Pigeon	1
Porcupine	1
Rabbit	0
Raccoon	7
Rattlesnake	0
Spotted towhee	1
Red Fox	0
Skunk	7
Small mammal spp.	2
Weasel	0
White Tail Deer	14

There was a sizeable increase in the number of deer killed this month. This is normal at this time of year as animals begin moving to winter range in response to snow and colder temperatures. One black bear was killed near the summit of Bozeman Pass. We also received a report from a volunteer of another black bear that was killed on 12 September; this was not included in our last month's report.

Task 2: Track bed monitoring at the MRL Bridge in October 2007

Deer have been the main users of the underpass. Deer use has been summarized by number of crossings per day. This metric will allow comparisons to be made between seasons and to compare rates of crossing before the fencing and bridge re-build with rates after construction. Sand track beds at MRL bridge are monitored for wildlife tracks as an index of movements under the interstate every other week through June 2010 for a total of 14 sampling sessions per year. Each sampling session includes visiting the track beds 5 days in a row (i.e., rake on day 0, record tracks on day 1, day 2, day 3 and day 4) for a total of about 70 track bed site visits per year.

Completion of the track bed was finally accomplished on 20 June, 2007. Three track bed sessions were completed in August. Two track bed sampling sessions were completed in September, and two sessions were completed in October (with a total of 8 track bed counts). Deer were the only larger mammals recorded. Smaller mammals included rabbits, birds, dogs and domestic cat.

Task 3: Photo monitoring at fence ends through October 2007

3 of 4 remote-trigger IR flash (invisible to passing drivers) digital cameras were placed at the 4 termini of the wildlife fencing. Monitoring will occur year-round. CERI installed most of the cameras on June 13. Two were mounted near the fence ends at the East end of the project. One was mounted underneath the I-90 bridge over Bear Canyon Road. Further tests of the camera have been conducted every time that the fence-end track-beds are examined and these indicate that the cameras are working reliably at this time in recording moving animals at the fence ends.

No animals were recorded by the SE fence-end camera (Camera 7) in October. On one occasion it recorded CERI personnel examining the track bed. The NE fence-end

camera (Camera 6) recorded one rabbit, and many mice during October. On four occasions it recorded CERI personnel examining the track bed. The camera at the western fence-end is located underneath the bridge where Bear Canyon Road passes beneath I-90. It was downloaded at the end of October. Since June it has recorded several people working on the fencing in June and July; one domestic cat in June; a raptor (probably a Goshawk) in July; another bird in October, and a cow (Holstein) that passed under three times in September and once in October. Batteries for all remote cameras were replaced at the end of October and should last through the winter.

Task 4: Infrared counter monitoring at jump-outs through October 2007

Fine-tuning the jump-out counters has proven to be more problematical than the cameras. Even at lowest sensitivities the Trailmaster sensors are often triggered by false events. Adjustment of counter sensitivity settings continued throughout October: although the sensors needs were masked with tape to narrow the window through which events are sensed many spurious events are recorded. The one sensor facing north which is not struck by sunlight is the only one that has very few false counts; however it often fails to register when an observer walks in front of it.

Task 5: Track bed monitoring at fence ends, jump-outs through October 2007

Track beds are used to verify data collected on remote cameras and counters in case those systems fail or prove unreliable. Species identification from track beds will complement counter data at jump-outs.

Black bear tracks were observed at the NE jump out that were left sometime between August 31 and September 9. It appeared that the black bear either climbed up the cement jump-out wall, or climbed up the slope along the side of the jump-out inside the fence and along the top of the cement wall before stepping onto the track bed and leaving tracks that headed toward the highway. The black bear did not exit through the jump-out opening and must have found another way to get out of the fenced area. It is possible that the bear could have climbed over the fence to get out.

No animal tracks were recorded on the top of any jump-outs in October. To date only the one set of black bear tracks have been recorded on any of the jump-outs. Several deer tracks have been recorded at the bottom of the SE jump-out but none of them entered the fence.

Task 6: Photo monitoring of culverts October 2007

Both of the culvert cameras were downloaded on 25 October and fresh batteries were installed that should last through the winter. To date there have been 7 instances of black bear passing through the culverts, 9 instances of raccoons, 2 beaver crossings, 2 mallard crossings, and one muskrat crossing:

Species	Location	Date	Time	Comments
Black bear	Camera 10	8/26/07	1337	Going N
Black bear	Camera 10	9/3/07	1355	Going N

Black bear	Camera 10	9/8/07	1307	Going N
Black bear	Camera 10	9/8/07	1308	Going N (same bear as at 1307)
Black bear	Camera 10	9/9/07	0424	Going N
Black bear	Camera 10	9/19/07	2130	Going S
Black bear	Camera 10	10/15/07	0339	Going S
Black bear	Camera 9	9/6/07	1030	Going S, water 2 feet deep
Raccoon	Camera 10	7/14/07	2240	Going N
Raccoon	Camera 10	8/17/07	2003	Going N
Raccoon	Camera 10	8/21/07	0515	Going S
Raccoon	Camera 10	8/24/07	2352	Going S
Raccoon	Camera 10	8/30/07	0538	Going S
Raccoon	Camera 10	9/2/07	0435	Going N
Raccoon	Camera 10	9/3/07	2104	Going S
Raccoon	Camera 10	9/19/07	2223	Going S
Raccoon	Camera 10	10/10/07	0639	Going S
Beaver	Camera 10	10/7/07	0116	Going S
Beaver	Camera 10	10/23/07	0721	Going S
Muskrat	Camera 10	8/8/07	0204	Going N
Mallards(6)	Camera 9	8/11/07	1230	Going N
Mallards(2)	Camera 9	9/27/07	1726	Going N

Although the data are not directly comparable with the Trailmaster camera data collected before the fencing was installed (because the Trailmasters were generally not as reliable) it appears that black bears at least have been using the culverts much more than they did previously. Batteries for all remote cameras were replaced at the end of October and should last through the winter.

Task 8: Data Management & Reporting in October 2007

Data is entered, cleaned and archived by CERI. Data is managed in a manner that will allow for CERI and WTI to analyze and report final results as a team (e.g., keys for spreadsheet headers and other relevant notes will be included in data files). Data entry and summary required two hours during October.

Discussion

After a month of trackbed surveys it is too early to tell if there is more use of the underpass than there was before the fencing was installed. However, deer use seems to be increasing as animals move to winter range and/or become habituated to the underpass. To date, no large mammals have been killed within the wildlife fencing project area and no tracks have been recorded using the jump-outs. It appears that the

fencing has been effective at keeping animals off the highway surface in this section and that few animals have entered inside the fence.

On October 31 the track bed was frozen solid after a heavy rain on October 30. No tracks were able to be left except during the day when direct sun warmed the trackbed. Trackbed surveys will therefore be discontinued until spring except for opportunistic track counts when snow conditions are favorable.